

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 3-16, and 18-20 are currently pending in the present application. Claims 1, 14, 16, 18, and 19 have been amended; Claim 17 has been canceled without prejudice or disclaimer; and Claim 20 has been added by way of the present amendment. Support for the amendments may be found at least in Figures 1, 2, 3, and 5, and in the corresponding descriptions. Thus, no new matter has been added.

In the outstanding Office Action, Claims 1, 4, 6, 7, and 10 were rejected under 35 U.S.C. §102(b) as anticipated by Amako et al. (U.S. Pat. No. 5,589,955, hereinafter “Amako ‘955”); Claims 1, 12, 14, 15, 16, 17, and 19 were rejected under 35 U.S.C. §102(b) as anticipated by Amako et al. (U.S. Pat. No. 5,497,254, hereinafter “Amako ‘254”); Claims 3 and 18 were rejected under 35 U.S.C. §103(a) as unpatentable over Amako ‘254 in view of Hamano et al. (U.S. Pat. Pub. No. 2004/0179253, hereinafter “Hamano”); Claim 5 was rejected under 35 U.S.C. §103(a) as unpatentable over Amako ‘955 in view of Amako ‘254; Claim 13 was rejected under 35 U.S.C. §103(a) as unpatentable over Amako ‘955 in view of Yamada et al. (U.S. Pat. Pub. No. 2003/0152756, hereinafter “Yamada”), Claims 8, 9, and 11 were rejected under 35 U.S.C. §103(a) as unpatentable over Amako ‘955 in view of Thompson, Jr. et al. (U.S. Pat. No. 6,717,104, hereinafter “Thompson”).

Addressing now the rejections of Claims 1, 4, 6, 7, and 10 under 35 U.S.C. §102(b) as anticipated by Amako ‘955 and Claims 1, 12, 14, 15, 16, 17, and 19 under 35 U.S.C. §102(b) as anticipated by Amako ‘254, Applicants respectfully traverse these rejections.

Amended Claim 1 recites, in part,

a laser source;
a spatial phase modulator configured to modulate a
phase of a laser beam emitted from the laser source;

a synthetic data generator configured to generate synthetic data by combining hologram image data representing a pattern image to be processed with position displacement hologram data for shifting the pattern image to a prescribed position, said synthetic data being input to the spatial phase modulator for the phase modulation of the laser beams; and

a focusing optical unit configured to guide the phase-modulated laser beam onto a surface to be processed to reproduce the pattern image on the processed surface,

wherein said position displacement hologram data includes either a horizontal hologram data set representing displacement in a direction parallel to the processed surface, a vertical hologram data set representing displacement in a direction perpendicular to the processed surface, or a combination of the horizontal and vertical hologram data sets, and

wherein the horizontal data set and the vertical data set are distinct from each other and calculated separately.

Claims 14 and 16 recite corresponding method and computer-readable medium claims.

Turning first to Amako '955, the Office Action asserts, on pages 2 and 3, that Amako '955 describes the features of Claim 1. Applicants respectfully traverse this assertion.

Amako '955, as cited by the Office Action, describes that “[t]he position and size at which the pattern is reproduced can be freely changed by selecting the focal length of the lens phase.”¹ The Office Action has taken the position that this portion of Amako '955 suggests that the lens phase would adjust the image in a perpendicular direction to the processed surface. However, nothing in Amako '955 describes combining a hologram image data representing a pattern image with a position displacement hologram data which includes either a horizontal hologram data set representing displacement in a direction parallel to the processed surface, a vertical hologram data set representing displacement in a direction perpendicular to the processed surface, or a combination of the horizontal and vertical hologram data sets. Furthermore, nothing in Amako '955 describes that the horizontal and the vertical data sets are *distinct from each other and calculated separately*.

¹ Amako '955: column 6, lines 27-29

Accordingly, even if Amako ‘955’s lens phase is able to adjust an image in a perpendicular direction, Amako ‘955 does not describe using either a horizontal hologram data set, a vertical hologram data set, or a combination of the horizontal and vertical hologram data sets to adjust the image, wherein the horizontal hologram data set and the vertical data set are *distinct from each other and calculated separately*.

Therefore, Amako ‘955 does not describe or suggest all of the features recited in Claim 1.

Turning to Amako ‘254, the Office Action asserts, at pages 4 and 5, that Amako ‘254 describes the features of Claim 1. Applicants respectfully traverse this assertion.

Amako ‘254, as cited by the Office Action, describes a lens array 1903 consisting of spherical lenses having the same focal length, and a composite lens 1902 which is a combination of four spherical lenses having different focal lengths.² However, nothing in Amako ‘254 describes combining a hologram image data representing a pattern image with a position displacement hologram data which includes either a horizontal hologram data set representing displacement in a direction parallel to the processed surface, a vertical hologram data set representing displacement in a direction perpendicular to the processed surface, or a combination of the horizontal and vertical hologram data sets. Furthermore, nothing in Amako ‘254 describes that the horizontal and the vertical data sets are *distinct from each other and calculated separately*.

Figure 19 of Amako ‘254 merely describes that an image may be *adjusted* vertically or horizontally. For example, as noted above, Amako ‘254 describes that “composite lens 1902 is a combination of four spherical lenses having difference focal lengths,”³ which may suggest a vertical adjustment, and that “four spots can be formed from a single beam at

² Amako ‘254: Figures 18, 19, and 20, and corresponding descriptions

³ Amako ‘254 column 13, lines 46-47

different positions on the liquid crystal device using composite lens 1902,”⁴ which may suggest a horizontal adjustment.

However, although Amako ‘254 may, at best, disclose certain vertical or horizontal *adjustments*, Amako ‘254 does not describe horizontal **and** vertical *data sets*. (Non-limiting examples of such data sets may be found in Figures 2, 3, and 5 of the present disclosure.) Additionally, Amako ‘254 does not describe or suggest horizontal and vertical data sets which are ***distinct from each other and calculated separately***. Accordingly, Amako ‘254 does not disclose the claimed position displacement hologram data, which includes either a horizontal hologram data set representing displacement in a direction parallel to the processed surface, a vertical hologram data set representing displacement in a direction perpendicular to the processed surface, or a combination of the horizontal and vertical hologram data sets, wherein the horizontal and the vertical data sets are ***distinct from each other and calculated separately***.

Therefore, Amako ‘254 does not describe or suggest all of the features recited in Claim 1.

Accordingly, neither Amako ‘254 nor Amako ‘955, alone or in combination, describes, suggests, or renders obvious the features of independent Claim 1. Thus, Applicants respectfully request that the rejection of independent Claims 1, 14, and 16, and claims depending respectively therefrom, be reconsidered and withdrawn.

New dependent Claim 20 has been added to further define the laser processing apparatus of Claim 1. Support for this claim may be found at least in Figures 1, 2, 3, and 5, and in the corresponding descriptions. Thus, no new matter has been added.

Applicants believe new Claim 20 is neither taught nor suggested in the cited art of record, and thus is believed to contain allowable subject matter.

⁴ Amako ‘254: column 13, lines 47-49

Consequently, in view of the present amendment and in light of the above discussions, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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